

# The status of *Lamingtona lophorhina* McKean & Calaby, 1968 (Chiroptera: Vespertilionidae)

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## Introduction

The genus *Lamingtona* and its sole species *L. lophorhina* were described by McKean & Calaby (1968) on the basis of six specimens from Mount Lamington in Northern Province, eastern Papua New Guinea, at 8° 55' S, 148° 10' E. Although showing *Lamingtona* to have a clear relationship to *Nyctophilus*, the original account is insufficiently detailed to permit a proper assessment of its status or of possible relationships of *L. lophorhina* to any of the several currently recognized species of this predominantly Austro-Papuan genus. The original material of *L. lophorhina* is housed in the South Australian Museum, Adelaide and in the collections of the Commonwealth Scientific and Industrial Research Organisation (Division of Wildlife Research), Canberra. Through the courtesy of Dr J. H. Calaby we have been able to examine the two paratypes from Canberra and to compare them directly with most of the described forms of *Nyctophilus*, with especial attention to those already known from New Guinea.

## Systematic Section

McKean & Calaby (1968) compared *Lamingtona* primarily with *Nyctophilus*, although only two species (*timoriensis* and *geoffroyi*) of the latter are actually mentioned in their account. The principal diagnostic character that they use in separating *Lamingtona* from *Nyctophilus* and from its close relative *Pharotis* is the absence in *Lamingtona* of any band of integument connecting the ears across the forehead and they also remark that the ears of *Lamingtona* are smaller and the tragus not broadened basally as it is in these genera. In *Nyctophilus* it has been possible to examine specimens in alcohol of *geoffroyi*, *timoriensis*, *gouldi*, *bifax*, *walkeri*, *microdon*, *arnhemensis* and *microtis* (the last including *bicolor*), the species that tentatively we recognize in this genus, and in *Pharotis* similar examples of its sole representative, *P. imogene*. The ears are connected by a moderate or high band (which incidentally is not an extension of their inner or medial margins, but a separate structure arising from the outer or medial surface of each conch) in *Pharotis imogene* and in all of the species of *Nyctophilus* except *arnhemensis* and *microtis*. In *arnhemensis* the band is low and in *microtis* only slightly developed and barely discernible or absent in the midline, a point made clear in the original description of this species by Thomas (1888) who says 'band across the forehead nearly or quite obsolete in the centre'. On occasion, therefore, the ears are not joined at all. In *Pharotis imogene* and in several of the species of *Nyctophilus* the ears are large or sometimes very large, but those of *N. microtis* are relatively small, as its name implies, although Thomas (1915) found them to be rather larger than he thought originally (1888). The ears of *walkeri* and *arnhemensis* are of similar size or are only a little larger than

those of *microtis*, which in turn resemble the ears of *Lamingtona* in size. The tragus is broadened basally in all except *Nyctophilus microtis*, although the extent of such widening may be slight. In *microtis*, however, this broadening of the tragus is often very poorly marked and may be virtually absent.

According to McKean & Calaby (1968) *Lamingtona lophorhina* lacks an ear band. Examination of the two paratypes (♀ CM 2090, 2091) shows this to be correct in the sense that the ears are not joined near the bases of their inner or medial margins by an obvious band of integument. However, although in both paratypes the area between and in front of the ears is densely pilose, careful investigation reveals the presence of a low integumentary ridge in the dry skins, extending from a point just behind the inner margin of each ear towards the midline. These ridges do not quite reach the median line but diminish in height towards the centre of the head. The condition exactly resembles that found in *Nyctophilus microtis* in which the ears are supported medially by a thick, tapered integumentary ridge whose outer and highest parts are integral with the medial faces of the ears. As in the paratypes of *Lamingtona lophorhina* the integumentary ridges taper to the midline, which on occasion they do not quite reach, and at best the ears are joined medianly only by a low elevation. So far as can be determined from the dry skins the tragus in one paratype (CM 2091) is more or less spatulate and little widened basally but in the other example (CM 2090) the tragus is slightly widened in its lower part: in both the tragus has a bluntly rounded tip, inclined anteriorly and is closely similar to the tragus of *Nyctophilus microtis*. We can see no reason that supports the recognition of *Lamingtona* as a genus distinct from *Nyctophilus* on account of the characters originally proposed. Miller (1907) in defining *Nyctophilus* noted 'Ears . . . usually joined across forehead by a conspicuous band of membrane, but this obsolete at middle in one species . . .'. [Since Miller stated that he had examined *timoriensis*, *microtis* and *walkeri*, the 'one species' was presumably *microtis*.] Moreover, the extent of joining of the ears (and the shape of the tragus) is known to vary within other bat genera and scarcely justifies even subgeneric recognition, especially since in *Nyctophilus* the relatively rudimentary integumentary ridges of *microtis* and *lophorhina* are linked by the low band of *arnhemensis* to the higher, more obvious connecting bands of species of similar size such as *bifax*, *walkeri* and *microdon*. There appear to be no significant cranial features to support the subgeneric separation of *microtis* and *lophorhina* (and possibly *arnhemensis*) from the remaining species currently recognized in *Nyctophilus*.

In discussing the affinities of *Lamingtona* McKean & Calaby (1968) remarked that it 'probably belongs in the subfamily Nyctophilinae but because of the ear characteristics it falls outside that subfamily as currently defined'. This claim deserves examination, especially in view of the close correspondence between the ear of *L. lophorhina* and that of *Nyctophilus microtis*, even to the shape and size of the small internal lobe near the base of its posterior or outer margin. Although Tate (1941) did indeed mention 'large united ears' as one of several features of the subfamily, the original definition by Miller (1907) characterized it externally by the form and structure of the muzzle and noseleaf, without reference to the ears. Miller remarked that the subfamily 'Differs from the Vespertilioninae in the abruptly truncate muzzle, on the anterior face of which the nostrils open forward beneath a distinct horseshoe-shaped ridge or small noseleaf'. Incidentally, though the New World genus *Antrozous* (usually, though perhaps erroneously placed in the Nyctophilinae) has an ear band basically similar to that of *Nyctophilus*, it is interrupted in the middle, as on occasion is the rudimentary band of *N. microtis*, and therefore does not (contra Tate) join the two ears together. There are evidently no grounds for excluding *lophorhina* and *microtis* from the Nyctophilinae unless it is proposed radically to redefine this alleged subfamily. As pointed out by McKean & Calaby, *lophorhina* has the small noseleaf and grooved muzzle characteristic of *Nyctophilus*: in fact, so far as can be determined from the dry skins of the paratypes, it is very similar in rhinarial structure to *microtis*, with an apparently truncate muzzle.

The two paratypes (CM 2090, 2091) are dorsally a rather uniform reddish brown, ventrally a little paler and more ochreous: the wing membranes are blackish brown, the tail membrane brownish. Both have every indication of prolonged immersion in alcohol (from

1929 to 1967 according to McKean & Calaby, 1968): the dorsal pelage is blackish brown at the base but otherwise bleached reddish brown, the ventral pelage similarly coloured but with the tips of the hairs more ochreous or buffy brown. In general the pelage is dense and long both above and below, almost shaggy. It is noticeably long and thick on the head as far anteriorly as a line just anterior to the eyes: the muzzle and the anterior part of the underside of the chin are sparsely covered with shorter hairs. A similar distribution of fur on the head is found in *Nyctophilus microtis*.

So far as can be determined, the narial foliations of *lophorhina* consist of a raised ridge surmounting the nostrils, the second low ridge lying behind it divided medianly. A similar structure (type 2 of Thomas, 1915) characterizes *Nyctophilus microtis*. The ears closely resemble those of this species, and are moderate and full, with a rounded tip, the posterior margin of the ear evidently concave above the antitragal lobe. The basal third to one half of the medial surface of the conch is sparsely pilose as in *N. microtis*. As already discussed, the interaural band in the paratypes exactly resembles the rudimentary band found in that species, and both *lophorhina* and *microtis* have an essentially similar tragus.

The skull of *lophorhina* closely resembles that of *Nyctophilus microtis* in both size and structure. The sagittal crest in the two paratypes examined (one, CM 2091 with slightly worn teeth), however, is less developed frontally than in adults of *N. microtis*. The upper surface of the rostrum also provides a point of variation: in CM 2090 the rostrum has a very shallow, almost imperceptible median depression, while CM 2091 has a relatively deep, well-defined longitudinal sulcus. Mr Peter Aitken of the South Australian Museum has examined the holotype (M6404) and two of the remaining paratypes (M6402, M6403): the final paratype (M6401) is in alcohol with the skull *in situ*. He reports that M6402 has a relatively shallower, more saucer-shaped depression on the top of the rostrum than M6403 and M6404, which each have a very distinct, deep longitudinal rostral depression forming a more obvious trough.

There is a similar range of variation among the specimens representing *Nyctophilus microtis* and those referred to this species that we have examined, all from Papua New Guinea. The young adult holotype of *bicolor* (= *N. microtis bicolor*) (BM(NH) 5.11.28.2) from an unknown locality near the coast on the Aroa River, c. 9° 05' S, 146° 48' E has a dorsally flattened rostrum with no more than the slightest suggestion of any median depression, while another immature (AMNH 108531) from Sogeri, 9° 30' S, 147° 33' E, the type locality of *microtis* itself, has such a depression only faintly indicated. The holotype of *microtis* (BM(NH) 88.4.14.1) has a very shallow rostral depression much like that of CM 2090. A further specimen (BM(NH) 88.4.14.5) from Sogeri has a moderate longitudinal rostral depression similar to that of CM 2091 but shallower, while an example (BM(NH) 34.1.14.7) from Kokoda, 8° 53' S, 147° 44' E has a large, very deep median sulcus that is more greatly developed than the sulcus of this paratype of *lophorhina*. This last locality, incidentally, is but little distant from Mount Lamington at 8° 55' S, 148° 10' E, whence the original series of *lophorhina* was obtained. The collection of the American Museum of Natural History also includes a further six specimens from a variety of localities in Papua New Guinea that reflect this variation in the degree of development of the rostral depression. From the limited material available to us it does not seem to be correlated with geography, sex or with age (judged by tooth wear) once full maturity is achieved: the only specimens in which the rostral depression is virtually absent are clearly immature or young.

In size *lophorhina* almost exactly resembles *Nyctophilus microtis*. Ranges of selected measurements of *lophorhina* (from McKean & Calaby, 1968), followed by those of adults of *N. microtis* in the British Museum (Natural History) and in the American Museum of Natural History (number of specimens examined in parentheses): length of forearm 39–40 (6), 37.5–40.5 (8); length of ear 15–19.5 (6), 15–19 (7); condylobasal length 13.8–14.7 (5), 13.5–14.5 (5); length of maxillary toothrow (c–m<sup>3</sup>) 5.3–6.0 (5), 5.5–6.4 (8).

Although small, the sample of specimens that we have examined leaves little doubt that *lophorhina* and *microtis* are conspecific, if indeed not synonymous, and also closely related to *bicolor*. However, the close proximity in eastern Papua of the type localities of these three



forms and the paucity of material from this area makes any further evaluation of their taxonomic validity difficult if not impossible. The differences between such specimens as we have seen are small and indicate that at best only subspecific separation can be justified. For the present, therefore, we are inclined to accept only a single species, *Nyctophilus microtis*, with the provisional recognition of three subspecies, *N. m. microtis* Thomas, 1888, *N. m. bicolor* Thomas, 1915 and *N. m. lophorhina* McKean & Calaby, 1968.

### Summary

A review of the characters ascribed to the vespertilionid genus *Lamingtona* McKean & Calaby, 1968 from New Guinea shows that it cannot be separated generically from the predominantly Austro-Papuan genus *Nyctophilus* and that there is no justification for its retention as a valid subgenus within *Nyctophilus*. Examination of paratypes of its type species *L. lophorhina* McKean & Calaby, 1968 together with further information from the original series indicates that it is conspecific and possibly synonymous with *Nyctophilus microtis* Thomas, 1888. Three subspecies of *N. microtis* (*N. m. microtis*, *N. m. bicolor* Thomas, 1915, *N. m. lophorhina* McKean & Calaby, 1968) are tentatively recognized in eastern Papua but lack of adequate material prevents any proper assessment of their validity.

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